

AMENDMENTS TO THE CLAIMS

Please amend claims 1-30.

Please enter the pending claims as follows:

This listing of the claims replaces all prior versions, and listings, of claims in the application.

Listing of the Claims

1. (Currently Amended) A method comprising:

determining an index-matching liquid;

determining a set of one or more constituents based on said index-

matching liquid;

providing a photoresist for use in an immersion lithography system;

adding said set of one or more constituents to said photoresist;

and

altering the liquid-contact properties of the said photoresist by adding

a set of one or more constituents into the liquid photoresist.

2. (Currently Amended) The method of claim 1 wherein ~~the~~ said set of one or more constituents is determined based upon ~~an~~ said index-matching liquid of ~~the~~ an immersion lithography exposure system.
3. (Currently Amended) The method of claim 2 wherein ~~the~~ said index-matching liquid ~~is~~ comprises water.
4. (Currently Amended) The method of claim 3 wherein ~~the~~ said set of one or more constituents ~~includes~~ comprises at least one water-insoluble constituent.
5. (Currently Amended) The method of claim 4 wherein ~~one of the~~ said at least one water-insoluble ~~constituent is a~~ constituent is selected from ~~the~~ a group consisting of a hydrophobic ionic photoacid generator and a non-ionic photoacid generator.
6. (Currently Amended) The method of claim 4 wherein said at least one ~~of the~~ water-insoluble ~~constituent comprises~~ constituent is a water-insoluble quencher.
7. (Currently Amended) The method of claim 4 wherein said at least one ~~of the~~ water-insoluble ~~constituent comprises~~ constituent is a water-insoluble polymer.
8. (Currently Amended) The method of claim 4 wherein water-soluble constituents are bound to said at least one ~~of the~~ water insoluble constituent ~~constituents~~ via a

binding method selected from ~~the~~ a group consisting of covalent binding, ion pairing, and Van der Waal's forces.

9. (Currently Amended) The method of claim 4 wherein said at least one ~~or more of the water-insoluble constituent constituents~~ may react when said photoresist is used to modulate susceptibility to etch.
10. (Currently Amended) The method of claim 3 wherein ~~the~~ said set of one or more constituents ~~includes~~ comprises at least one water-soluble constituent.
11. (Currently Amended) The method of claim 10 wherein said at least one ~~of the water-soluble constituents is a constituent~~ is selected from ~~the~~ a group consisting of a water-soluble photoacid generator, a water-soluble quencher, a water-soluble buffer, a water-soluble surfactant, and a water-soluble plasticizer.
12. (Currently Amended) The method of claim 11 wherein ~~the~~ said water-soluble surfactant is a fluorocarbon-based surfactant.
13. (Currently Amended) An apparatus comprising:
a substrate; and

~~an immersion lithography~~ a photoresist deposited on ~~the~~ said substrate, ~~the~~ said photoresist having incorporated therein one or more additives that alter ~~one or more~~ liquid-contact properties of ~~the~~ said photoresist;

an index-matching liquid disposed in contact with said photoresist;

and

a last lens element disposed in contact with said index-matching liquid.

14. (Currently Amended) The apparatus of claim 13 wherein ~~the one or more~~ said liquid-contact properties of ~~the~~ said photoresist are specific to a particular liquid.

15. (Currently Amended) The apparatus of claim 14 wherein ~~the~~ said particular liquid is comprises water and ~~the~~ said one or more additives ~~include~~ comprises at least one hydrophobic additive.

16. (Currently Amended) The apparatus of claim 15 wherein ~~one of the~~ said at least one hydrophobic additive comprises ~~additives is~~ an ionic photoacid generator.

17. (Currently Amended) The apparatus of claim 15 wherein ~~one of the~~ said at least one hydrophobic additive comprises ~~additives is~~ a water-insoluble quencher.

18. (Currently Amended) The apparatus of claim 15 wherein at least one of ~~the water-insoluble constituents~~ said hydrophobic additives ~~comprises~~ is a water-insoluble polymer.
19. (Currently Amended) The apparatus of claim 15 wherein water-soluble constituents are bound to said at least one of ~~the water-insoluble constituents~~ hydrophobic additive via a binding method selected from ~~the~~ a group consisting of covalent binding, ion pairing, and Van der Waal's forces.
20. (Currently Amended) The apparatus of claim 15 wherein said at least one ~~or more~~ of ~~the water-insoluble constituents~~ hydrophobic additive may react when said photoresist is used to modulate susceptibility to etch.
21. (Currently Amended) The apparatus of claim ~~15~~ 14 wherein the said particular liquid is comprises water and the said one or more additives ~~include~~ comprises at least one hydrophilic additive.
22. (Currently Amended) The apparatus of claim ~~15~~ 21 wherein ~~one of the~~ said at least one hydrophilic ~~additives~~ additive comprises is a water-soluble quencher.
23. (Currently Amended) The apparatus of claim ~~15~~ 21 wherein ~~one of the~~ said at least one hydrophilic ~~additives~~ additive comprises is a water-soluble buffer.

24. (Currently Amended) The apparatus of claim ~~15~~ 21 wherein ~~one of the~~ said at least one hydrophilic ~~additives~~ additive comprises is a water-soluble surfactant.

25. (Currently Amended) The apparatus of claim ~~15~~ 24 wherein ~~the~~ said water-soluble surfactant ~~is~~ comprises a fluorocarbon-based surfactant.

26. (Currently Amended) The apparatus of claim ~~15~~ 21 wherein ~~one of the~~ said at least one hydrophilic ~~additives~~ additive comprises is a water-soluble plasticizer.

27. (Currently Amended) A system comprising:

a last lens element of a lithography exposure system, ~~the~~ said last lens element having a specific index of refraction;

an index-matching liquid in contact with ~~the~~ said last lens element, ~~the~~ said index-matching liquid having an index of refraction ~~substantially~~ equal to ~~the~~ said specific index of refraction to within a specified tolerance; and

a photoresist layer in contact with ~~the~~ said index-matching liquid, ~~the~~ said photoresist layer composed of photoresist having incorporated therein one or more constituents that improve the contact between ~~the~~ said index-matching liquid and ~~the~~ said photoresist layer.

28. (Currently Amended) The system of claim 27 wherein ~~the~~ said index-matching liquid ~~is~~ comprises water and ~~the~~ said one or more constituents ~~includes~~ comprises at least one water-insoluble constituent.
29. (Currently Amended) The system of claim 28 wherein ~~one of the~~ said at least one water-insoluble constituent comprises ~~constituents is~~ a constituent selected from ~~the~~ a group consisting of a non-ionic photoacid generator, a hydrophobic ionic photoacid generator, a quencher, a polymer, an oligomer, and a molecular species.
30. (Currently Amended) The system of claim ~~29~~ 27 wherein ~~the~~ said index-matching liquid ~~is~~ comprises water and ~~the~~ said one or more constituents ~~includes~~ comprises at least one water-soluble constituent wherein said at least one ~~of the~~ water-soluble constituents ~~is~~ comprises a constituent selected from ~~the~~ a group consisting of a water-soluble photoacid generator, a water-soluble quencher, a water-soluble buffer, a water-soluble surfactant, and a water-soluble plasticizer.